

INSPECTORS REPORT
WASTE LICENCE REGISTER NUMBER 22-1

(1) Summary:

The application is for the continued operation, extension of and increase in waste volumes up to 120,000 tonnes per annum at the East Cork Landfill, Rossmore Carrigtohill, County Cork. A landfill has operated at the site since 1986 and the now closed section of the landfill is unlined. The landfill developed since 1994, comprises lined cells with leachate collection and storage prior to transport offsite to Carrigtohill WWTP. The application is for the disposal of non-hazardous waste at the facility within lined cells. The Proposed Decision restricts the area within which landfilling will be permitted and requires the site to be restored in accordance with a Restoration Plan to be agreed with the Agency. There are commercial shellfish growing areas and ecologically valuable habitats in the adjoining estuary.

Name of Applicant	Cork County Council
Facility Name(s)	East Cork Landfill
Facility Address	Rossmore, Carrigtohill, Co. Cork
Description of Principal Activity	Engineered landfill
Quantity of waste (tpa)	120,000
Environmental Impact Statement (EIS) Required	Yes
Number of Submissions Received	13
INSPECTOR'S RECOMMENDATION	The proposed decision to grant a licence be approved.

Notices	Issue Date(s)	Reminder(s)	Response Date(s)
Article 8	29 April 1998		20 May 1998
Article 14 (2) (b) (ii)	29 April 1998, 16 September 1998		29 July 1998, 3 September 1998 30 November 1998, 06 January 1999
Section 52	25 February 1999		05 March 1999
Article 14 (2) (a)	25 February 1999		
Article 16	14 April 1999		23 July 1999
Article 16(2)	16 July 1999		23 July 1999

Applicant Address	County Hall, Cork
Planning Permission Status and Date Granted (if appropriate)	Not Applicable for landfill site. Planning permission ,has however, been granted to Electric Power Controllers Ltd. for the installation of landfill gas powered electricity generation dated 29/09/'94.
Planning Authority	Cork County Council
For Local Authority applicants, is the facility within its own functional area	Yes
Is the facility an existing facility	Yes
Prescribed date for application	1 October 1997.
Date Application received	27 February 1998
Location of Planning Documents in Application	Not Applicable
Location of EIS in Application	EIS submitted as a five volume attachment to the application on 29 July 1998 in response to Art 13 Notice.

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL	OBSERVATIONS
26/03/98	Site notice assessment	Tadhg O'Mahony	Site Notice non compliant
30/07/98	Site notice assessment: EIS requirement	Tadhg O'Mahony, Brian Donlon	Site notice compliant
26/08/98	Review site operation	Tadhg O'Mahony, Gerry Carty	
14/10/98	Review site operation	Tadhg O'Mahony, Anne Butler	
05/03/99	Site meeting with Atlantic Shellfish Limited.	Tadhg O'Mahony, Sara Kennelly	
23/03/99	Review site operation	Tadhg O'Mahony, Ted Nealon	

(2) Class/Classes of Activity

The class(es) of activities for which the applicant has applied are marked below. The principal activity is indicated by (P), other activities by X.

Waste Management Act, 1996			
THIRD SCHEDULE Waste Disposal Activities		FOURTH SCHEDULE Waste Recovery Activities	
1. Deposit on, in or under land (including landfill).	X	1. Solvent reclamation or regeneration.	
2. Land treatment, including biodegradation of liquid or sludge discards in soils.		2. Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).	X
3. Deep injection of the soil, including injection of pumpable discards into wells, salt domes or naturally occurring repositories.		3. Recycling or reclamation of metals and metal compounds.	X
4. Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons.	X	4. Recycling or reclamation of other inorganic materials.	X
5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.	P	5. Regeneration of acids or bases.	
6. Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule.		6. Recovery of components used for pollution abatement.	
7. Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1 to 10 of this Schedule.	X	7. Recovery of components from catalysts.	
8. Incineration on land or at sea.		8. Oil re-refining or other re-uses of oil.	
9. Permanent storage, including emplacement of containers in a mine.		9. Use of any waste principally as a fuel or other means to generate energy.	X
10. Release of waste into a water body (including a seabed insertion).		10. The treatment of any waste on land with a consequential benefit for an agricultural activity or ecological system.	X
11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.	X	11. Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule.	X
12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.	X	12. Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.	
13. Storage prior to submission to any activity referred to in this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.	X	13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.	X

Class Description

The description of the activities as provided in the application are provided below:

Third Schedule:

Class 1: Waste disposed of at the Rossmore Landfill site prior to 1993 was placed into unlined cells.

Class 4: Leachate collected from the cells is stored in the leachate holding lagoon (A HDPE lined lagoon), before it is removed off site by tanker to the Carrigtohill Waste Water Treatment Plant for treatment

Class 5: The present and proposed landfilling activities consist of waste being placed in lined discrete cells which will be capped when completed and isolated from the environment. **This is the principal activity applied for.**

Class 7: Settlement and aeration of leachate in the leachate storage lagoons prior to its removal off site by tanker.

Class 11: Sludges are mixed with other wastes during the landfilling process to ensure that the waste body is as homogenous as possible.

Class 12: Materials deposited in the Civic Waste Facility may if not properly sorted, need to be sorted and repackaged prior to landfilling.

Class 13: Waste arriving at the site will need to be checked and classified before deposition. Emergency storage will be provided for this purpose.

Fourth Schedule:

Class 2: There is a possibility that organic material will be accepted/sorted on the site for composting.

Class 3: At present there is a metal collection bin where metal is deposited for transport to metal recyclers.

Class 4: The proposed Civic Waste Facility will provide facilities for the recovery of inorganic materials for recycling.

Class 9: There is a proposal for the installation of a landfill gas energy recovery facility on the Rossmore site once landfill gas production is adequate.

Class 10: Organic waste which has been composted may be used in the landscaping of the Landfill site as an intermediate cover in the closure/restoration stage of the landfill.

Class 11: Material for recycling will be recovered and transported off site for reuse. Landfill gas from the site will be used for a as a fuel for power generation.

Class 13: Storage of leachate prior to treatment. Temporary storage while monitoring before deposit on site for treatment.

Activities recommended for licensing:

It is recommended that all the above activities for which the applicant has applied for a waste licence be licensed subject to the requirements of Condition 1.1 of the Proposed Decision.

(3) Facility Location

Appendix 1 contains site location plans.

The East Cork landfill, is located in the townland Rossmore on the northern shore of the section of Cork Harbour referred to as the North Channel. The facility is approximately 14 km east of Cork City and 2.7 km south of the nearest village, Carrigtohill (See Appendix 1.A- Location Plan). The site comprises some 14.54 hectares.

The nearest residential property is approximately 50m from the facility boundary and is associated with the premises operated by Atlantic Shellfish Limited. The landuse in the area comprises agriculture, limestone quarrying and oyster farming. The farm land immediately surrounding the landfill is used as grazing pasture for cattle.

The void space within the landfill has been created by quarrying activities carried out under contract to the local authority. The landscape in the area reflects the prevalence of quarrying with large areas of exposed limestone faces. A former quarry to the east of the landfill has been restored to grassland.

The groundwater resource in the vicinity of the site is classified as a Regionally Important Aquifer. Saline intrusion and the resulting saline/fresh groundwater interface does, however, limit the groundwater resource potential in the vicinity of the site. There is no groundwater abstraction currently occurring in the immediate vicinity of the site for the purpose of human consumption. Water supply to the premises operated by Atlantic Shellfish Limited to the immediate southeast of the facility is from mains supply.

Ecological designations:

There are a number of environmental designations associated with the coastal and estuarine habitats adjoining the landfill site. These are as follows:

- Cork Harbour Special Protection Area (SPA) designated in accordance with the Birds Directive;
- Cork Harbour Ramsar Site designated in accordance with the Ramsar Convention; and,
- Great Island Channel proposed NHA(pNHA).

In addition to the above designations, two species protected under the EU Habitats Directive are known to occur in the North Channel of Cork Harbour. These are Otter (*Lutra lutra*) Annex II of the Habitats Directive and Golden Plover (*Pluvialis apricaria*) Annex I of the Birds Directive.

Oyster Farms

The North Channel in the vicinity of the Rossmore Landfill supports oyster beds associated with three oyster farms: Atlantic Shellfish Ltd, Fota Oyster Farm Ltd and Oysterhaven Shellfish Ltd.

(4) Waste Types and Quantities

Total quantities and types of wastes proposed to be accepted by the facility are shown below.

YEAR	NON-HAZARDOUS WASTE (tpa)	HAZARDOUS WASTE (tpa)	TOTAL (tpa)
1999	40,000	0	40,000
2000	120,000	0	120,000
2001	120,000	0	120,000
2002	120,000	0	120,000
2003	120,000	0	120,000
2004	50,000	0	50,000

The expected life of the facility and the expected maximum annual tonnage are indicated below.

Expected Life of Facility (years)	Six (up to 2004)
Maximum Annual Tonnage (tpa)	120,000

Note: The restrictions imposed on the development of the site by Condition 5.13 will reduce the void space within the facility available for landfilling. These restrictions will also result in the facility being filled prior to 2004.

(5) Facility Design

• Development

The facility is proposed to be developed on a phased basis as shown in Appendix 2 - *General Site Layout Plan* and will comprise a total of six phases, Phase I to VI, three of which, Phases I to III have been completed to date incorporating Cells 1 to 5.

The inspector recognises the importance of the East Cork Landfill in the short term for waste management in Cork county. Notwithstanding this, in light of the following:

- the hydrogeological and geological characteristics of the site and surrounding area- a regionally important aquifer in an area of Waulsortian Limestone bedrock and a groundwater vulnerability rating classified as extreme (Note: due to saline intrusion the value of the groundwater resource in the immediate vicinity of the site is limited);
- the occurrence of commercial oyster beds in the immediate vicinity of the facility - Atlantic Shellfish Limited, Fota Oyster Farms Limited and

Oysterhaven Shellfish Limited operate commercial oyster farms in the North Channel adjacent to the landfill; and

- the presence of recognised ecologically valuable habitats associated with the coastal and estuarine habitats adjacent to the facility(including Cork Harbour Special Protection Area (SPA), Cork Harbour Ramsar Site and Great Island Channel proposed NHA(pNHA));

It is the opinion of the Inspector that the further development of the East Cork Landfill as proposed in the application should be significantly restricted. To this effect the proposed phased development of the site is restricted as follows:

- waste as permitted in accordance with the conditions of the licence is restricted to the proposed cells 1 to 7 only(Condition(5.13.1);
- inert waste only shall be permitted to be deposited in cell 8 (Condition(5.13.2.); and,
- no waste to be deposited in the areas assigned for cells 9,10a and 10b.

In addition to the above, in order to minimise the visual intrusion of the landfill and to maximise the compatibility of the final landform with the surrounding landscape and the land form in existence prior to the landfill, the height of the restored landfill will be limited to 19m O.D(Condition 8.1). Condition 8.2 requires proposals to be submitted to the Agency for the filling sequence which will enable this final maximum height to be achieved post settlement. Once the final levels have been achieved, the site will be restored in accordance with the Restoration and Aftercare Plan agreed with the Agency in accordance with Condition 8.1.

Condition 8.1 requires proposals to be submitted to the Agency to restore the area assigned for cells 9, 10a and 10b to limestone habitats of ecological value in line with methods employed in the rehabilitation/ restoration of limestone quarries.

The facility is designed to accommodate an additional 610,000 tonnes of uncompacted waste based on February 1998 figures. This quantity has been reduced by the restrictions imposed on the development of the facility by Condition 5.13. The maximum annual tonnage of waste permitted to be deposited at the facility is 120,000 per annum(Condition 5.8).

- **Infrastructure**

The boundary of the facility will be delineated by a security fence which will link with the gated entrance to the facility(Condition 4.3.1).

Site infrastructure associated with the landfill and Civic Waste Facility and related activities required to be in place at the facility is detailed in *Condition 4- Site infrastructure* and is shown in Drawing No. D1/1 Rev.A.

- **Liner Details**

Landfilling operations at the facility between 1986 and 1993 was carried out in unlined cells (See area referred to as capped landfill in Appendix.2). This former landfill area is now restored to grassland. All landfilling undertaken after 1993 has been in lined cells. In cells 1 and 2 the liner system consisted of a double liner system comprising a geocomposite layer between two 2mm HDPE liner layers overlain by a

leachate collection network. The liner system for Cells 3 -5 inclusive consisted of a comprised a 0.5m layer of engineered clay (permeability $k < 1 \times 10^{-9} \text{ms}^{-1}$) placed on the prepared base of the landfill on top of which was placed a bentomat GCL Liner followed by a 2mm HDPE liner. In addition, to the above a 500mm layer of pea gravel was placed on top of the HDPE Liner of the cells 3-5. All future cells (Cells 6-7 inclusive (Condition 4.17.1 and 4.17.2), the proposed additional leachate storage lagoon and the proposed surface water/groundwater retention pond will be required to be lined with a composite liner system incorporating the following(or equivalent): a 1m layer of engineered clay (permeability $k < 1 \times 10^{-9} \text{ms}^{-1}$) placed on the prepared base of the landfill overlain by a 2mm HDPE liner. A geotextile layer will be placed over the HDPE layer. In addition, to the above a 500mm layer of pea gravel will be placed on top of the HDPE Liner of the landfill cells.

- **Leachate Management**

Leachate management at the facility is addressed in Condition 4.18. A leachate collection system will be installed within the 500mm thick granular layer overlaying the HDPE liner in each of the landfill cells. Leachate levels will be maintained at a maximum depth of 1m above the HDPE liner as required by Condition 4.18.6.). Leachate is pumped from the leachate collection manholes/sumps along an overground network of pipework to the leachate storage lagoon. Leachate is tankered from the leachate storage lagoon at regular intervals, dictated by leachate levels in the lagoon, to the Carrigtohill Waste Water Treatment Plant.

Condition 4.18.2 requires proposals for future leachate management at the facility including the construction of a second leachate storage lagoon and construction of a rising main to facilitate the removal of leachate to the treatment plant to be submitted to the Agency for agreement.

Condition 9.1 requires leachate levels and composition within each cell and in the leachate storage lagoon to be monitored in accordance with *Schedule F.6 Leachate Monitoring*. The leachate levels within the cells and the freeboard in the leachate storage lagoon are required to be monitored daily. Leachate monitoring also includes the former landfill area.

- **Landfill Gas Management**

A proposal for the active collection and flaring of landfill gas for the former landfilled areas within the facility and cells 1 to 8 inclusive of the current landfill area is required by Condition 4.19.1. A proposal for the utilisation of landfill gas (4.19.3) will be required to be submitted to the Agency for agreement. In addition, the existing flare unit is required to be upgraded to an enclosed flare (Condition 4.19.2(ii)).

- **Groundwater Management**

Condition 4.20.1 of the Proposed Decision requires a proposal for groundwater management at the facility to be submitted to the Agency for agreement. This will include the management of groundwater during site preparation/quarrying activities. Proposals for the management of groundwater during, construction, operation and

restoration of the facility are included in Schedule E - Specified Engineering Works and will be subject to the agreement of the Agency.

- **Surface Water Management**

Water collecting in the base of the active quarry floor is pumped to an excavated trench(ditch) which discharges to the estuary via an unlined pond in the eastern edge of the facility. Condition 4.21.1(ii) requires proposals for the construction of a lined surface water/groundwater retention pond prior to discharge of surface water to the estuary. These include monitoring proposals and the controls to facilitate the shutting off of the discharge in the event of contamination are required.

Condition 4.21.2. requires an oil interceptor to be installed prior to the point discharge of surface run off from areas of hard standing from the facility.

- **Capping System**

The proposed capping system of the active landfill site incorporating cells 1 to 7 shall be capped as follows: a minimum 300mm gas collection layer, a minimum 600mm thick barrier clay layer with a permeability of 10^{-9} ms^{-1} or equivalent agreed by the Agency, a 300mm drainage layer with a permeability equal or greater than 10^{-4} ms^{-1} , all overlain by a minimum 1m of subsoil and top soil (where topsoil is a minimum of 150mm in depth). Cell 8 is required to be capped with a minimum of 500mm subsoil overlain by a minimum 150mm topsoil.

Condition 4.23.1 requires proposals for daily cover and intermediate capping to be submitted to the Agency for agreement. Final capping will be required to be put in place within six months of all new cells being filled to the final levels (Condition 4.23.3). For cells which have been previously filled within the current operational landfill area (i.e. cells 1 to 3 inclusive), these areas are required to be permanently capped within twelve months of the date of grant of this licence (Condition 4.23.4). Intermediate capping prior to placement of the final capping system on completed cells will consist of a minimum cover of inert material 500mm (Condition 4.23.3).

(6) Facility Operation/Management

The facility will be operated in accordance with the conditions attached to the licence.

Access to the site by members of the general public shall be restricted to the Civic Waste Facility only (Condition 5.5).

- **Waste Handling**

All waste arriving at the facility will be weighed and recorded prior to being directed to the main tipping area. Waste deposited at the active tipping face will be spread using a steel wheeled compactor. At the end of each working day cover material to a specification agreed in advance with the Agency (Condition 4.23.1) is required to be placed on the waste deposited at the working face. Any cover material which is eroded washed off or otherwise removed will be required to be replaced at the end of the working day (Condition 5.16). At the end of each working week inert cover material will be placed on the deposited waste to a depth of 150mm(Condition 5.16).

- **Waste Acceptance Procedures**

Waste permitted to be deposited at the facility will be limited to non- hazardous household and compatible commercial and industrial waste. Hazardous waste, liquid waste and animal by-products will not be permitted to be deposited at the facility(Condition 5.1). Only those wastes types specified in Schedule H, Conditions 5.2, and listed in Table E.1.1 of the application will be permitted to be deposited at the landfill. The wastes types, annual maximum quantities to be deposited at the facility are listed below:

WASTE TYPE	TONNES PER ANNUM
Household	68,200
Commercial	21,400
Sewage Sludge	3,600
Construction and Demolition	13,800
Industrial Non-Hazardous Sludges	5,200
Industrial Non-Hazardous	7,800
Total	120,000

Sludges will only permitted to be deposited at the facility in accordance with the conditions of the licence before 2 p.m. on Monday to Friday. Condition 5.4 requires site specific procedures for the acceptance of waste at the facility to be submitted the Agency for agreement. Condition 5.10 requires proposals for the reduction of and the phasing out of the acceptance of sludges at the facility over a three year period from the date of grant of the licence.

Proposals for the recovery of white goods, composting of biodegradable wastes, waste oils, and inert waste to be used for cover/restoration (Condition 5.24.4) are required to be submitted to the Agency for agreement.

- **Hours of Operation**

The proposed hours of operation of the facility are from 08:00 to 18:00 Monday to Friday as defined in the Interpretation of the Proposed Decision as Working Day. Notwithstanding this definition, Condition 5.5 restricts the hours during which waste is permitted to be accepted at the facility to between 08:30 and 17:00 Monday to Friday inclusive.

- **Nuisance Control**

Potential nuisances are controlled by Condition 6. Condition 6.7 requires the licensee to submit to the Agency for agreement proposals to prevent, control and eradicate infestations of insects and rodents at the facility. Condition 6.8 requires the licensee to submit to the Agency for agreement a programme for bird control measures to be applied at the facility. The use of daily cover, as required by Condition 5.16, also minimises the potential for odour nuisance, as well as the attraction of the facility to birds and vermin, nuisance caused by insects and litter problems. Condition

6.3.5 requires the licensee to submit for agreement proposals for the operation of the facility in adverse wind conditions. Odours arising from the facility have given rise to nuisance at the property of Atlantic Shellfish Limited. Condition 6.10 requires that the activities are carried such that odours do not result in significant impairment or interference with amenities or the environment beyond the facility boundary. Landfill gas odours will be controlled by combustion. Traffic using the site will use the wheel-wash to prevent the tracking of any materials onto the public road. Scavenging will not be allowed at the facility and is prohibited by Condition 5.18.

- **Fire Control**

Fire control at the facility will be in accordance with the measures outlined in Attachment F.4 Fire Control and Section 4.9 Fire(Operational Plan - Environmental Controls) of the application. Condition 10.2 requires an assessment of the fire control and firewater retention facilities at the facility to be undertaken. No smoking will be permitted within the facility except in the site office.

- **Traffic**

Traffic using the facility accesses the site along a road which leads to the property of Atlantic Shellfish Limited. The local authority are responsible for the maintenance this road. Condition 4.4.2 requires the licensee to submit a proposal for the introduction of appropriate signage and speed restrictions for the control of vehicles within the facility and along the access road leading to the facility.

(8) Emissions to Air

Emissions to air from the facility will include landfill gas, odours and dust. Odours are addressed under *Section 7: Facility Operation/ Management: Nuisance Control*.

Landfill gas

Condition 4.19 provides for landfill gas management at the facility. This incorporates an active gas abstraction system incorporating an enclosed flare unit to replace the existing flare unit operating at the facility and utilisation of landfill gas both of which would result in emissions of combustion products of landfill gas to the atmosphere. Monitoring and Emission limits for the combustion products of landfill gas associated with the Flare Unit and the proposed Landfill Gas utilisation Plant are specified in Schedule F.1(b) and Schedule G.3 Emission Limits from Landfill Gas Flare and Landfill Gas Combustion Plant.

Condition 9.6 requires the licensee to submit proposals for landfill gas monitoring to be carried out within the buildings and confined spaces within the facility and within the adjoining premises of Atlantic Shellfish Limited (subject to their agreement).

Dust

Dust deposition monitoring undertaken at three locations around the site. are within the emission limit value of 350mg/m²/day which will apply for emissions of dust from the facility at or beyond the facility boundary (*Schedule G-Emission Limits G.5 Dust Deposition Limits*).

(9) Emissions to Groundwater

Site Geology

The site is underlain by Lower Carboniferous rock comprising predominantly Waulsortian limestones and the Cork Red Marble Formation in the northern section of the site. Some Karst features occur in the bedrock to the west of the site. This limestone is evident in the exposed quarry face to the east of the active tipping area. Bedrock drilling encountered two cavities which are indicative of karstification. The overburden comprises predominantly sandy clay with some sands and gravels. The overburden across the site comprising sands and gravels has been removed and the limestone bedrock is exposed on the floor and flanks of the undeveloped sections of the quarry.

Site Hydrogeology

The groundwater resources in the bedrock beneath the site (Waulsortian Limestone) has been classified as a Regionally Important.

Groundwater Vulnerability

The groundwater vulnerability rating associated with the site is classified as extreme. The design of the landfill incorporating an engineered lining system, management of leachate, surface water and groundwater management at the facility will prevent direct discharges to groundwater from the lined landfill. Condition 4.18.2 e) requires proposals for leachate management (including collection and removal of leachate in the former unlined section of the landfill). These proposals are required in order to control/prevent the discharge of leachate from the unlined former landfill area to groundwater. This condition also requires proposals for measures to isolate surface and groundwater from the landfill mass in the former landfill area.

Groundwater Quality

Monitoring of groundwater quality has been undertaken at two locations one at the northern facility boundary and one at the eastern facility boundary. Results for BH3 show elevated levels of ammoniacal nitrogen ranging from 10.9 mg/l (January 1998) to 248mg/l (June 1998). The most recent value obtained in February 1999 is 66.8 mg/l. These values may be associated with leachate generated within the unlined former landfill area. Condition 9.13 requires proposals to monitor the fate of leachate arising from the former landfill areas within the facility. Condition 9.8 requires all private wells and groundwater supplies used for animal drinking within 500m of the facility to be included in the monitoring programme for groundwater. Due to the proximity of the landfill to the shoreline and saline intrusion the groundwater supplies in the vicinity of the site have limited value as a drinking water supply. Monitoring of groundwater resources in the vicinity of the landfill as provided in *Schedule F.5 Groundwater Monitoring* will ensure that any deterioration in groundwater quality and/or groundwater resources will be detected.

(10) Noise Emissions

Noise emissions from the operation of the landfill facility consists of mobile plant on site include a compactor and excavator. Other sources of noise include the existing landfill gas flare unit, site development work including excavation of stone, waste related traffic and traffic associated with the operation of the associated quarry. Noise from the quarry operations to the north west of the facility as well as traffic associated with the local road network and local agricultural activities also contribute to the background noise levels. The nearest residential property is approximately 50m to the south of the facility associated with the premises of Atlantic Shellfish Limited.

Condition 4.26 prohibits the use blasting for the purpose of extraction of rock for the purpose of site preparation. Condition 6.8 prohibits the use of gas operated bird scaring devices for bird control at the facility.

Condition 9.4 requires that noise monitoring proposals are submitted for noise sensitive locations surrounding the facility. Noise monitoring is required to be undertaken at the agreed offsite locations and at locations along the facility boundary(*Schedule F.3 Noise*). Noise emissions at the facility boundary are required not to exceed the emission limit values specified in *Schedule G Emission Limits G.1 Noise Emissions*.

(11) Emissions to Sewer

There will be no emissions to sewer from the facility.

(12) Emissions to Surface Waters

Surface water features on the site include a pond within the eastern site boundary and the drainage ditch which accommodates water pumped from the quarry floor. The level of water in the pond shows fluctuation in level which may reflect tidal nature of the adjoining estuarine waters.

Condition 4.21.1 requires proposals for surface water management within the restored and the current landfilling areas at the facility. This includes the construction of a lined surface water/groundwater retention pond. These measures will control and facilitate monitoring the quality of surface water runoff generated within the facility prior to discharge offsite.

(13) Decommissioning and Aftercare

It is proposed to restore the facility to grassland suitable for agricultural purposes. Condition 8.1 of the Proposed Decision requires that a Restoration Plan (including Aftercare) is submitted to the Agency for agreement within twelve months of the date of grant of the licence. The height of the final(post settlement) landform shall be restricted to 19m O.D. and details of landfilling to achieve the final landform are required to be submitted to the Agency for agreement.

(14) Other Issues

Shellfish Quality in the vicinity of the landfill

The potential for the operation of the East Cork landfill to impact on the oyster beds in the adjoining estuary has been raised in the submissions received by Atlantic Shellfish Limited and Fota Oyster Farm Ltd.

The monitoring and classification for the North Channel Shellfish Production areas required by the relevant European Directives relating to shellfish water quality and the designation of shellfish production areas are described below:

- *Council Directive 79/923/EC on the quality required by shellfish waters*

This Directive requires member states to designate and monitor physical and chemical parameters of designated shellfish waters to ensure the quality of harvested material is maintained.

The most recent report by the Marine Institute, Bloxham et al., 1998 (*Trace Metal and chlorinated hydrocarbon concentrations in shellfish and fin-fish from Irish waters - 1996. Marine Environmental Series 2/98*) concludes for the Cork Harbour /North Channel shellfish growing area which adjoins the East Cork Landfill site, that water quality and shellfish quality (*Crassostrea gigas* -Pacific Oyster) was similar to the 1994 and 1995 results and conformed to the requirements of Council Directive 79/923/EC on the quality of shellfish waters. As there are no generally accepted European standards for contamination in shellfish, the levels were compared in the above mentioned report with the available standards and guidance values set by various OSPAR countries for human consumption. Trace metal and chlorinated hydrocarbon levels recorded in the 1996 survey for the Cork Harbour shellfish growing areas are reported to continue to be very low.

- *European Directive 91/492/EEC laying down the health conditions for the production and placing on the market of live bivalve molluscs*

This Directive lays down conditions for the production and placing on the market of live bivalve molluscs and other shellfish (such as gastropods e.g. periwinkles) intended for immediate human consumption or for further processing prior to consumption. The Department of Marine and Natural Resources is the responsible authority for the implementation of this Directive which provides for strict controls including the monitoring of shellfish from the production areas for bacterial contamination, algal biotoxins and chemical contaminants.

The results of this monitoring programme dictates, where necessary, the need for controls on harvesting or the processes needed to reduce the level of bacterial contamination to acceptable levels. Under the Directive, the location and boundaries of shellfish production areas and their classification is required to be clearly defined. The North Channel shellfish production area has been classified by the Department as Category B - "*Shellfish from these areas must undergo purification in an approved plant for 48 hours prior to sale for human consumption*". This area includes the oyster beds operated by Atlantic Shellfish Limited, Fota Oyster Farm Limited and Oysterhaven Shellfish Limited.

Condition 9.14 requires proposals for an ecological monitoring programme for the intertidal habitats including mudflats and associated flora and fauna (including bivalve populations). This monitoring will be in addition to monitoring of shellfish growing areas already undertaken by the Department of Marine and the Marine Institute.

Habitat Quality in the vicinity of the landfill

Ornithological data submitted in the application confirmed that the North Channel continues to be one of the most important sections of Cork Harbour SPA both for total wildfowl numbers and for populations of certain individual species. The consistently high numbers of shelduck, dunlin and redshank are of particular importance in a national context.

Monitoring of the intertidal area has indicated that the macroinvertebrate fauna (mollusca, annelids and crustacea) represented in the estuarine tidal area adjacent to the landfill (including the area adjacent to the former landfill area) is typical of an Irish estuarine ecosystem. The invertebrate fauna recorded provide adequate and suitable food resources for the most common bird species occurring in the North Channel (e.g. shelduck, dunlin, curlew and redshank). In addition, observations made by Biosphere Environmental Services Ltd. on the usage by estuarine birds of the mudflats surrounding the Rossmore peninsula found that all of the mudflats in the North Channel were utilised by birds at different stages of the tide.

The ecological survey undertaken as part of this application concluded that there is no evidence to indicate that the estuarine environment is being adversely affected by the operation of the East Cork Landfill. In addition, it is stated in the application that the operation of the landfill does not appear to be lowering the conservation value of the North Channel area of the Cork Harbour Special Protection Area nor the North Channel proposed Natural Heritage Area.

Notwithstanding these conclusions, Condition 9.14 requires proposals for an ecological monitoring programme for the intertidal habitats including mudflats and associated flora and fauna. This programme is to include an assessment of habitat quality within the section of the Cork Harbour SPA and the proposed North Channel NHA. Such monitoring will be undertaken annually.

(15) Waste Management, Air Quality and Water Quality Plans

Waste Management Plan for Cork County Council (May 1999)

The Waste Management Plan for Cork County makes specific reference to the Rossmore Landfill awaiting granting of a licence. The annual capacity (120,000 tonnes per annum) referred to in the Plan reflects the tonnage which has been applied for in the waste licence application. The Council's Action Plan: Waste Disposal - Action 44 specifies that Cork County Council will endeavour to acquire waste licences for a number of existing landfill sites including the Rossmore Landfill. Action 44 also states that these facilities will be upgraded with due regard to the EU Council Directive on the Landfill of Waste and the EPA Landfill Manuals.

Air Quality Management Plan

There is no Air Quality Management Plan for Cork County.

Water Quality Management Plan

There is no Water Quality Management Plan for the Cork Harbour.

(15) Submissions/Complaints

Appendix 3 contains a list of all submissions received relating to the application. The dates received and the details of the individual, department, group or organisation making the submission are provided.

An overview of all submissions received in relation to the waste licence application is provided. This includes a summary of all issues raised in the submissions and clearly shows how these issues are dealt with in the proposed decision.

1. Mr. D Mc Carthy, Rossmore, Carigtohill, Co. Cork.

Mr. Mc Carthy made four submissions to the Agency in relation to the application. The issues raised in each of these are listed and addressed separately below. Mr. Mc Carthy owns land in the immediate vicinity of the landfill which comprises grazing pasture.

1 (a) Date received, 4 March, 1998.

Mr. Mc Carthy states that the Rossmore peninsula became a toxic waste dump in the early eighties without any notification by Cork County Council. He states that this has been put in writing over the years relating to environmental damage and serious property loss. Emphasises that he is totally opposed to the application and objects to further development of the landfill until the damage caused is cleaned up.

Response:

The conditions attached to the licence will exert strict control over the operations of the existing facility including waste types to be accepted, leachate, landfill gas, surface water and ground water management. In addition, Conditions 9.1 to 9.21 requires extensive environmental monitoring to be undertaken within and in the vicinity of the facility. The loss of property referred to is a matter for the local authority to address with the relevant landowner(s). Condition 8.1 requires a Restoration Plan to be submitted to the Agency for approval. Once agreed the site will be restored in accordance with this Master Plan. The site is to be restored to grassland suitable for agricultural purposes.

1 (b) Date received 20 April, 1998

Issues Raised

Mr. Mc Carthy refers to further information requested in relation to the East Cork Landfill. He states that this will not be found elsewhere in the nation when the following are taken into account:

- *deprivation of his residential rights*

Response: See response to 1(a) re; loss of property and restoration of the site.

- *destruction of his private water supply*

Response: Condition 9.8 requires proposals for the inclusion of all private wells and groundwater supplies (used for animal drinking) within 1 kilometre of the facility to be included in the groundwater monitoring programme.

- *other unspecified ways which Mr. Mc Carthy states damage has been caused to his property. States that as this damage arose the council were informed. Refers to this damage as the most uncivilised serious crisis one could visualise.*

Response: It is not possible to comment on the alleged damage as no specific details are provided. See also response to 1(a) re control exerted over site operations by the conditions attached to the PD.

1 (c) Date received 12 February, 1999

Mr Mc Carthy refers to previous submissions 1(a) and 1(b) in relation to severe damage caused to his property since the dumping of waste commenced at Rossmore Peninsula.

Response: See response to 1(a).

1 (d) Date received 11 August, 1999

Mr. Mc Carthy refers to the Agency's letter dated 23 July 1999 in relation to further information in relation to the licence application. Mr. Mc Carthy states that his complaints still stands. States that he is continually informing the council of the damage that is being caused and yet they have not responded to address the situation. He states his objection to the granting of a licence still stands until the damage caused is restored.

Response: See response to 1(a).

2 Mr. David Hugh Jones Atlantic Shellfish Ltd., Rossmore, Carrigtohill, Co. Cork

Mr . Hugh Jones operates an oyster farm adjoining the eastern boundary of the East Cork Landfill site. Native and Pacific oysters from the farm are supplied to overseas markets.

Mr. Hugh Jones has made eight submissions to the Agency in relation to the application. The issues raised in each of these submissions are addressed separately below.

2.(a) Date received 9 March 1998

Mr. Hugh Jones outlines the nature of the business he operates at Atlantic Shellfish Limited at Rossmore. States that product is eaten uncooked and is subject to health audits by environmental bodies and consultants. Stresses the importance of having and being seen to have a clean product and environment.

Issues raised:

(1) Odours and cover material

Essential that smells from the landfill are kept to a minimum. States that despite complaining to the county council, the smells are sometimes so bad that the work force suffer from headaches and tightness between the eyes. Mr. Hugh Jones states that the apparent reasons for this include the lack of cover and the frequent reworking of wastes for new cell walls etc. States that the procedures in relation to cover at the site are inadequate in the control of smell, litter and food dispersal around the area by birds. Biodegradable plastic which is being used by the council at present is unsuitable due to the windy coastal location.

Response: Condition 5.16 specifies the requirement for daily cover to be placed on the deposited waste at the end of the working day. In addition, at the end of the working week a minimum of 150mm of inert material shall be placed over the waste. Condition 5.15 requires that all previously deposited waste within the operational landfill is covered by a temporary cover of at least 500mm of suitable inert material.

Condition 5.21 precludes the reworking of waste once deposited with the exception of works associated with the construction and installation of the leachate collection system or in the event of the occurrence of a fire. Condition 6.10 requires the licensee to ensure that the facility is operated in a manner such that odours do not result in significant impairment or interference with amenities or the environment beyond the facility boundary. Bird control measures at the facility are specified in Condition 6.8.

(2)Height of landfill

Mr.Hugh Jones states he was promised by Cork County Council that the height of the landfill would not rise above the original land contours and this level is now barely exceeded.

Response: Condition 8.1 requires a Restoration Master Plan to be submitted to the Agency for agreement and restricts the height of the final(post settlement) landform be restricted to 19m O.D.

(3) Integrity of side walls

Ability of side walls of the landfill(which it is stated have broken in many places) to contain the liquid. The breaking of side walls is due to the landfill being taken too high.

Response: Condition 9.20 requires the licensee to undertake a slope stability assessment of the side slopes of the facility within six months of the date of grant of the licence. This assessment will be required to be repeated annually thereafter. In addition, Condition 9.20 also requires monthly inspections of the landfill for any evidence of slippage or failure of the perimeter embankment. Any such occurrence is required to be recorded as an incident and appropriate measures will be required to be put in place to avoid a reoccurrence.

(4) Risk of and monitoring of contamination of oysters

States he is concerned due to bacterial contamination of the oyster stocks in the estuary and states the council have installed and monitored boreholes for this purpose around the site, especially when the site was unlined.

Response:

The Department of Marine and Natural Resources is the responsible authority for the implementation of European Directive 91/492/EEC which provides for strict controls including the monitoring of shellfish from the production areas for bacterial contamination, algal biotoxins and chemical contaminants. In addition to this monitoring Condition 9.14 requires monitoring of invertebrates including bivalve populations in the vicinity of the landfill. See also *Shellfish Quality in the vicinity of the landfill* under *Other Issues*.

(5) Leachate contamination

Inadequate capacity to draw leachate from the site to Carrigtohill Waste Water Treatment Plant. State that leachate is often overflowing and comment that the sea is only 50m away.

Response:

Condition 4.18 specifies the requirements at the facility in relation to leachate management. Proposals for the construction of a second leachate storage lagoon and a rising main from the facility to the Carrigtohill WWTP are required to be submitted to the Agency for agreement (Condition 4.18.2 a)). Proposal for stand by pumps in the event of breakdown of leachate pumps and leachate level monitoring in the lined cells and in the unlined former landfill area are also required. Condition 4.18.4 specifies that the frequency of leachate removal from the leachate storage lagoons will be such that a minimum freeboard of 0.5m is maintained in the lagoon at all times.

Condition 9.13 requires proposals for investigations of the fate of leachate from the former landfill areas within the landfill with particular reference to the risk of contamination of surface water, estuarine sediments and groundwater resources within and in the vicinity of the site.

(6) Other issues:

Request additional landscaping and tree planting. State that have been very tolerant neighbours and ask that now that the facility is to be licensed, it will be operated according to EPA guidelines.

Response:

The Restoration Plan required by Condition 8.1 will take into consideration the recommendations in the Agency Publication Landfill Restoration and Aftercare. Once a licence has been issued, the facility will be required to operate in accordance with the conditions of the licence. Failure to comply with the conditions of the licence could result in prosecution.

2(b) Date received 11 July 1998

Issues raised

Requested information on the timescale for submissions and the further development of the site. Referred to gas from the last cell now being flared off.

Response:

Mr. Hugh Jones would have been informed in writing of any relevant period during which submissions could be made in relation to the application. The Agency notes the reference to the flaring of landfill gas. Condition 4.19 refers to landfill gas management at the facility. The emissions of the combustion products of landfill gas from the flare unit and the proposed landfill gas utilisation plant will be required to be monitored in accordance with *Schedule F.1(b) Landfill Gas Flare and*

Landfill Gas Utilisation Plant and will be required to comply with the relevant emission limits specified in Schedule G4: Emission Limits from Landfill Gas Flare and Landfill Gas Utilisation Plant.

(1) Site development

Concerned that the existing cell nearly full and no sign of preparation for the next stage of development to accommodate further waste.

Response:

Condition 4.24.1 requires an updated Construction Schedule to be submitted to the Agency which will incorporate the requirements of the licence. Condition 5.12 restricts the deposit of waste in any cell without the leachate management infrastructure in place. The liner system to be introduced in all future cells is specified in Condition 4.17. Waste will only be permitted to be deposited in new cells subject to the prior written agreement of the Agency.

(2) Absence of cover

Concerned that rubbish still not being covered despite assurances received and when cover placed it is inadequate. Queries why problem with covering the site and states that there should be reserve stocks of soil to cover the site as laid out in the Agency's Guidelines. Particular problems caused by the reworking of rubbish to make the walls higher and leaving the reworked waste uncovered. Odours cause for concern and making people ill and staff members have intend to leave due to this if situation not remedied.

Response: See response 2A *Odours/unsuitable cover*. Condition 4.23.5 requires six monthly reports on the quantity of capping materials stockpiled at the facility and includes a requirement for a stockpile of six months of capping materials to be stored at the facility.

(3) Integrity of lining system

Uncertainty as to whether or not the lining system is working - presence of a permanent pool of leachate alongside the western side of the active cell.

Response: The applicant has indicated in information submitted to the Agency on 30 November 1998 that leakage of leachate alongside the western side of the active cell referred to in this submission was due to the leachate drainage pipe in the newly developed section of the site not being sealed. This problem was subsequently rectified. There is strict quality assurance validation reporting procedure required to be submitted to the Agency following all specified engineering works associated with the operation and future development of the facility. Such works are specified in Schedule E : Specified Engineering Works and include the preparatory works for cell development and lining system and leachate management infrastructure. In addition, following the placement of the liner system for all future cells, the proposed surface water/groundwater retention pond and the proposed additional leachate storage lagoon a leak detection survey is required to be undertaken. Should any defects in the lining system be identified these will be required to be remedied prior to the commissioning of the relevant cell/ lagoon/ retention pond.

(4) Leachate leakage

States that vast majority of leakage is disappearing into the fissured limestone beneath the site. State that aware of connection between groundwater and the sea and comment that if seawater flows into the site then clearly leachate will also flow into the sea.

Response: See response 2(a)(5)-Leachate contamination and 2(b)(3)- Integrity of Liner System.

(5) Potential for contamination of oysters

He is concerned with potential for contamination of the oysters (used for human consumption in a raw state) from the estuary due to the landfill site. He states that he doesn't know what is going into the landfill.

Response: See response 2(a)(4) - Risk of contamination of oysters. Condition 5.1, 5.2 and 5.3 inclusive specify the waste types and quantities that are permitted to be accepted at the facility.

(6) Sewage sludge

State that objected strongly when sewage sludge was being brought into the site and state that Agency aware of material that can be far more hazardous.

Response:

Sludges permitted to be accepted at the facility include sewage sludges and non hazardous industrial sludges only. Condition 5.9 requires proposals to restrict the sludges to be accepted at the facility to dewatered sludges. Condition 5.10 requires proposal to be submitted to reduce the quantity of sludges to be accepted at the facility. These proposals are required to phase out the deposition of sludges at the facility within three years from the date of grant of the licence. Condition 5.11 restricts the acceptance of sludges at the facility to before 14:00 from Monday to Friday inclusive to reduce the potential for odours associated with sludges to give rise nuisance. In addition, sludges will only be accepted at the facility from producers who hold a disposal permit issued by the licensee. Condition 5.4 requires site specific Waste Acceptance Procedures to be submitted to the Agency for agreement. In addition, Condition 5.6.1 requires proposal for Waste Characterisation to be submitted including a proposal for sludge eluate and toxicity testing.

(7) Site Visit

Requests the Agency to visit the facility and ask to be informed of date by which final submissions must be made.

Response: The Inspector met with Mr. Hugh Jones on 5 March 1999 at the facility and at the premises of Atlantic Shellfish Limited in response to this request.

2(c) Date received 27 January 1999

Issues raised

(1) Leachate management

Refers to previous correspondence re; lake of black leachate to west of new area of landfill. Asks whether leachate has been analysed and queries the remedial measures proposed by the Agency to stop this leakage. Leachate management (Photographs included and cross referred to in text). Leachate in current cell is close to overflowing the western bund. Leachate is being tankered from within the bunded area(created by waste) and is being dumped in the western edge of the site. The submission states that this practice is hard to believe as also is the method by which leachate is emptied from the tanker into the leachate lagoon.

Response:

See response 2(a)(5)-Leachate contamination, and 2(b)(3)-Integrity of lining system and 2(b)(4)-Leachate leakage. A sample of leachate from the western edge of the current landfill area was taken by B.H.P Laboratories and results of analysis of this sample were forwarded to the Agency. The results and interpretation of this analysis were also submitted by the applicant in response to the agency's notice dated 16 September 1998. This information was available to members of the public at the offices of the EPA and at the offices of the local authority, the applicant in this instance. Mr. Hugh Jones was furnished (29 April 1999) with a copy of the response from the applicant to the Agency to the issues raised in this submission in relation to leachate management at the facility and that by Fota Oyster Farm Limited along with the relevant results of analysis as provided by the applicant.

(2) Leachate leakage

Leachate leaking from cells which have been filled above the level of the liner. States that the council promised that these areas would be repaired, however, this did not happen. Refers to twenty location where leakage occurs.

Refers to possible reasons for leakage each of which are responded to individually below:

- *problems with pumps in cells 1 and 3 and pumps are not being used,*

Response: Condition 4.18.2 c) requires standby pumps to be provided in the event of breakdown of leachate pumps or during maintenance works.

- *inadequacy of leachate holding tank*

Response: Condition 4.18.2 a) requires proposals for the construction of a second leachate storage lagoon at the facility.

- *inadequate capacity for leachate at the Carrigtohill Waste Water Treatment Plant (states that only 3 tankers a day can be catered for)*

Response: In addition, increased storage capacity prior to the treatment stage has become available at the Carrigtohill WWTP.

- *avoidance of extra cost of tankering leachate to Ballincollig for treatment.*

Response: The option of transporting leachate to Ballincollig has not been proposed. Condition 7.6.1 does, however, provide for alternative Waste Water Treatment Plant to be used for leachate treatment subject to the prior agreement of the Agency.

Irrespective of reason for leachate leakage states that council would be in breach of licence if had one and asks for the Agency's opinion on this.

Response: See response 2(a)(5)-Leachate contamination and 2(b)(3)- Integrity of lining system. Condition 4.18.1 to 4.18.9 specify leachate management requirements within the facility. The licensee would be required to comply with these conditions and all other conditions of the licence on grant of licence.

(3) Risk of contamination of oysters

Refer to produce which is eaten uncooked and which are not monitored for any of the dangerous products found in dump - particularly in light of the fractured limestone in the area with direct connection with the sea. Refer to proximity of Fota Oyster Farm Limited to pool at western edge of the site where leachate is stated to have been previously dumped. Asks who would be responsible for food poisoning incident when the licence is in place. States that these matters have been raised previously to the Agency and the council and none of the items that were to be improved have been.

Response: See response 2(a)(4)- Risk of contamination of oysters.

2(d) Date received 03 February 1999

Issues raised

(1) Damage to liner system /Leachate leakage

Refers to letter dated 27/01/99 2(c)above.

Asks for the analysis of results of leachate sample taken from leaking cell along with any explanations. Requests a response to his letter of 27/01/99 for his own files.

Disputes reason for leachate leaking being ascribed to a badly fitted bung on the end of the cell connecting pipe. State that they were advised by the operator of the digger that the liner was punctured when being covered with gravel and that this is shown as the most recent completed cell has never been in danger of overflowing while the previous cell was. Refers to the first cell being so water logged that the sides are unable to contain the waste.

Response: See response 2(c)(1)-Leachate management and 2(c)(2) Leachate leakage.

(2) Oyster quality/ public safety

Asks that their fears for the public safety of their oysters have been taken into account in the licensing of the facility. States that looks forward to meeting at a later date possibly with Fota Oysters.

Response: See response 2(a)(4). The concerns raised by Atlantic Shellfish Limited have been taken into account in assessing the waste licence application and in the conditions of the Proposed Decision. The Inspector met with Mr. Hugh Jones on 5 March 1999 at the facility and at the premises of Atlantic Shellfish Limited in response to this request.

2(e) Date received 11 February 1999

Issues raised

Acknowledges the Agency's recent visit of the landfill site and that many of the issues of concern raised by Atlantic Shellfish are being taken up with the council. Requests that these items are listed.

Response: The concerns raised by Atlantic Shellfish Limited have been taken into account in assessing the waste licence application and in the conditions of the Proposed Decision.

(1) Odours

Continuing foul smells from the landfill which is affecting the workforce. States that odours from the facility have contributed to two staff members leaving. Family living on the site have sealed windows to try and keep out odours. State that while tolerant over the years no effort being made to help them:

- *cover material not being applied at the site and there is no cover over large area of site.*
- *sludge and animal remains are being mixed with domestic rubbish over the entire site*
- *compaction of waste results in foul smells from the waste mass*
- *retaining walls of dump are made of rubbish.*

Response: See response 2(a)(1) -Odours and cover material

(2) Site supervision

Site caretaker often not on site and there is no supervisor on site.

Response: Condition 2.9 requires the facility manager or a suitably qualified and experienced deputy to be present at all times during the operation of the facility.

(3) Liner damage

Expresses concern to hear that the latest cell is punctured. Asks how it can be determine whether the cell/liner has been completely repaired.

Response: The applicant confirmed in further information submitted to the Agency on 18 June 1999 that the liner was damaged in the newly developed cell 4. The damage to the liner was repaired and a lined bund was constructed on the western side of Cell 4.

See also response to 2(b)(3)- Integrity of lining system.

Other issues

Asks for the inspectors view on the safety of the oysters outside the landfill perimeter.

Asks what exactly can be dumped at the site based on the site being lined. Mr. Hugh Jones asks inspector to meet with him on site and suggest a date in March.

Response: See response 2(a)(4) Risk of and monitoring contamination of oysters. The Inspector met with Mr. Hugh Jones on 5 March 1999 at the facility and at the premises of Atlantic Shellfish Limited in response to this request.

2(f) Date received 9 March 1999

Issues raised

Acknowledges visit by Agency staff to landfill and his premises on 5 March 1999.

Mr. Hugh Jones correspondence provides a summary of the activities involved at the oyster farm he operates, this account has been used in the account of the facility provided at the introduction to submission 2.

(1) Risk of contamination of oysters

States that used to supply 90% of the Good Food Guide Hotels and Restaurants in London but have lost many of their major customers due to sewage related health problems. Now concerned due to potential for contaminants entering sea with possible health implications to those consuming their oysters. Refer to the link between groundwater and the sea as shown by their wells going brackish when Readymix started to use groundwater to wash the gravel.

Response: See response 2(a)(4) Risk of contamination of oysters.

Other issues:

- *Timescale of landfill less than a decade.*

Response: Based on the remaining capacity at the facility, the proposed annual quantities of waste to be disposed of at the facility, and the restrictions on the further development of the facility imposed by Condition 5.13, the landfill is likely to be filled by 2002/2003. The filled site would then need to be

restored in accordance with the Restoration Master Plan and to the landform agreed therein with the Agency -Condition 8.1).

- *Restriction on dump from being allowed too close to western shoreline.*

Response: The exclusion of the proposed cells 9, 10a and 10b in the future development of the facility provides for a buffer area between the edge of the perimeter of the lined landfill area and the shoreline of the North Channel.

- *Restrictions on the height of landfill to that of the original landscape as previously promised.(Attached to submission is a photocopy of a photograph of the site from 1978 and 1997 to demonstrate the former and existing(1997)appearance of the landscape.*

Response: See response 2(a)(2)-Height of landfill.

- *Refers to the importance of the area for birds(SPA) and as a designated amenity area.*

Response: The Agency is fully aware of the environmental designations associated with the adjoining coastal and estuarine habitats adjoining the facility. These are referred to under *Facility Location-Ecological Designations and Other Issues-Habitat Quality in the vicinity of the site*. In addition, the Agency is aware of the amenity designations associated with the North Channel which includes the zoning of the North Channel estuarine habitats within the upper Harbour as an Ornithological Area in the County Development Plan -South Cork 1996.

2(g) Date received 19 April 1999

Issues raised

(1)Visibility of site/ Height relative to original contours of land

Plans of council to raise level of first three cells of the landfill further. States that understood these cells were ready for capping, Refer to height of landfill being increased be a further 20 feet and the litter netting will be raised on top of this as well. State that council reneged on original promise made in relation to the height of the landfill not to exceed the original contours of the land and state that already they are 30-40 feet above the original ground level(refers to photographs attached to submission received 9 March 1999 . Object to any further increase in the height of the landfill and to the unsightly net. Visibility of the landfill from their facility is not desirable for visitors to oyster farm.

Response: See response 2(a)(2)-Height of landfill

(2)Leachate Management

*Leachate breaching the sides of the first cell above liner because landfill too high. This was to be repaired and wasn't and now talks of raising the height even further. **Response:** See also response to 2(a)(3) -Integrity of side walls 2(a)(5)- Leachate contamination and 2(b)(3)- Integrity of limning system and 2(c)(2) -Leachate leakage.*

2(h) Date received 30 June 1999

Refers to previous letter 19/04/99. This letter was also copied to Cork County Council, An Taisce., Cork Environmental Forum and Mr. D. Mc Carthy , Barryscourt, Carrigtohill

Issues raised

(1)Proposed height of landfill

Refers to assurance from the applicant that no further waste will be placed on cells 1 to 3 until the proposed final height of the landfill has been agreed.

Mr. Hugh Jones refers to assurances given to him by the council that the filling of the quarry site with waste would adhere to the existing topography of the peninsula. A letter re: this promise is attached to the submission. State that he did not object to the dump going ahead based on the assurances re: height of landfill which he received from the council. States that council have already exceeded the original contour's of the site and refers to attached photos and an old OS map for the Rossmore peninsula.

Stated height of landfill as advised to him by the applicants consultants is 17m O.D, the quarry floor 3m OD giving a height of waste at 14 m OD. Based on this information Mr. Jones assesses the two options advised to him by the applicant with respect to raising the height of the landfill.

Option 1:

Increase in height of filled cells by 12 m presettlement, an approximate doubling of the height of the landfill.

Option 2:

Increase in height of filled cells by 8 m pre settlement, an approximate increase in the height of the landfill by 57%.

Mr. Hugh Jones states that he is opposed to both these options and questions the plan to increase the height of the landfill further in light of the following:

- *visibility of the landfill from all sides*
- *location relative to amenity area, and Special Protection Area;*
- *visibility from scenic road to the south which would be made more visible with litter netting, bulldozers, lorries and dust; and*
- *presence of three oyster farms feeding 0.75 million people with uncooked shellfish*

Mr. Hugh Jones advised by the applicants that if the current height of the landfill was to be the final height, the smell from the dump would be very bad. Mr. Hugh Jones states that measures could be taken to keep this nuisance to a minimum. Concludes by requesting the Agency's support in this matter.

Response: Assurances given to Mr. Hugh Jones by the council that the filling of the quarry site with waste would adhere to the existing topography of the peninsula is a matter between Mr. Hugh Jones and the Cork County Council. Notwithstanding this, Condition 8.1 takes into account the concerns raised by Mr. Hugh Jones in relation to the existing and proposed height of the landfill. See response to 2(a)(2)-Height of landfill.

3. Mr. Michael B.F, Tighe, Fota Oyster Farm Limited, Rossleague, Cobh Co. Cork

Date received , 5 February 1999

Mr. Tighe operates an oyster farm in the North Channel of Cork Harbour and the associated oyster beds are within 150m of the East Cork Landfill. Attached to this submission area a series of photographs of the site and an article relating to the City Dump by Colm Stanley.

Issues raised:

(1) Dumping of leachate

Dumping of leachate into unlined excavated pond adjoining the foreshore opposite oyster farm operated by Fota Oyster Farm Limited in December 1998 and January 1999 and the potential for contamination of groundwater and the adjoining estuary.

Mr. Tighe disputes the indication by local authority personnel that the liquid dumped in the pond was water. States that the non testing of the liquid prior to dumping in the pond was in breach of legislation. Refers to samples of the liquid in the pond being taken and passed to Dr. Petersen in the Cork Institute of Technology.

Response: Similar issues have also been raised by Atlantic Shellfish Limited in relation to leachate management at the facility and are - See response 2(a)(5) Leachate contamination, , 2(c) Leachate leakage.

(2) Odours and Landfill gas

Odours and Landfill Gas emanating from dump and potential impact on health of residents of adjacent premises of Atlantic Shellfish Limited.

Response: See response 2(a)(1) -Odours and cover material. Landfill gas management at the facility is specified in Condition 4.19 and includes proposals for active collection and flaring of landfill gas (4.19.1) and utilisation of landfill gas (Condition 4.19.3). Landfill gas monitoring (Condition 9.6) includes perimeter monitoring to detect off-site migration of landfill. Proposals are required to include landfill gas monitoring of the buildings and confined spaces within the facility and within the adjoining premises of Atlantic Shellfish Limited (Condition 9.6). Monitoring and Emission limits for the combustion products of landfill gas associated with the Flare Unit and the proposed Landfill Gas utilisation Plant are specified in *Schedule F.1(b) and Schedule G.3 Emission Limits from Landfill Gas Flare and Landfill Gas Combustion Plant.*

(3) Leachate leakage

Response: See response 2(b)(3) Integrity of lining system and 2(b)(4) -Leachate leakage.

(4)Height of waste above landfill.

The overall height is above the original height of the landscape prior to site being used as a dump.

Response: See response2(a)(2)-Height of landfill.

(5)Risk of shellfish contamination

Refers to incident of Diarrhetic Shellfish Poisoning (DSP)which resulted in the closure of the Cork Harbour area for harvesting of shellfish for two weeks. Makes reference to a suspected case of Amnesia Shellfish Poisoning(ASP) from samples taken of their oysters which has not been previously recorded in Cork Harbour before. Also makes reference to an increase in the mortality rate of their juvenile and adult oysters and state that more and more convinced that this is caused by seepage from the badly managed landfill. State that the condition of their oysters has deteriorated markedly over the last number of years and states that they can no longer sell their oysters June and September.

Response: See response2(a)(4) -Risk of contamination of oysters and 2(b)(5)-Potential for contamination of oysters.

(6)Extension of landfill

Concerned over extension of landfill and possible impact on oysters due to proximity of landfill and ability to sell same.

Response: See response under 2(f) Other issues-Timescale of landfill and Buffer zone between facility and western shoreline. The continued operation of the landfill would be required to comply with the conditions of the licence.

(7) Request for site meeting

State that would like to meet on site with the Agency to discuss the breach of regulation as discussed. Ask what action will be taken about the breach of regulations referred to in letter.

Response: The Inspector met with Mr.David Hugh Jones on March 5 1999, management of Fota Oyster Farm Limited were not unable to attend. The matters raised by Mr.Tighe in his submission were addressed by the Inpsector with the applicant and a response obtained which was subsequently forwarded to Mr. Tighe (29 April 1999) Limited along with the relevant results of analysis as provided by the applicant. See also response 2(c)(1) *Leachate Management.*

Signed _____

Dated:

Tadhg O'Mahony

APPENDIX 1

LOCATION PLAN

APPENDIX 2

GENERAL SITE LAYOUT PLAN

APPENDIX 3

SUBMISSIONS

**1. Mr. D Mc Carthy,
Rossmore,
Carigtohill,
Co. Cork**

Mr. Mc Carthy made four submissions received by the Agency on 4 March 1998, 20 April 1998, 12 February 1999 and 11 August 1999.

**2. Mr. David Hugh Jones,
Atlantic Shellfish Ltd.,
Rossmore,
Carrigtohill,
Co. Cork**

Mr. Hugh Jones made eight submissions received by the Agency on 9 March 1999, 11 July 1998, 27 January 1999, 3 February 1999, 11 February 1999, 9 March 1999, 19 April 1999 and 30 June 1999.

**3. Mr. Michael B.F, Tighe,
Fota Oyster Farm Limited,
Rossleague,
Cobh
Co. Cork**

Mr. Tighe made one submission received by the Agency on 5 February 1999.